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January, 1926

Number 47

NATIONAL PARKS BULLETIN

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U. S. Department of Agriculture

To Conserve Nature and Win All America
to Its Appreciation and Study



Photograph by H. C. Tibbitts

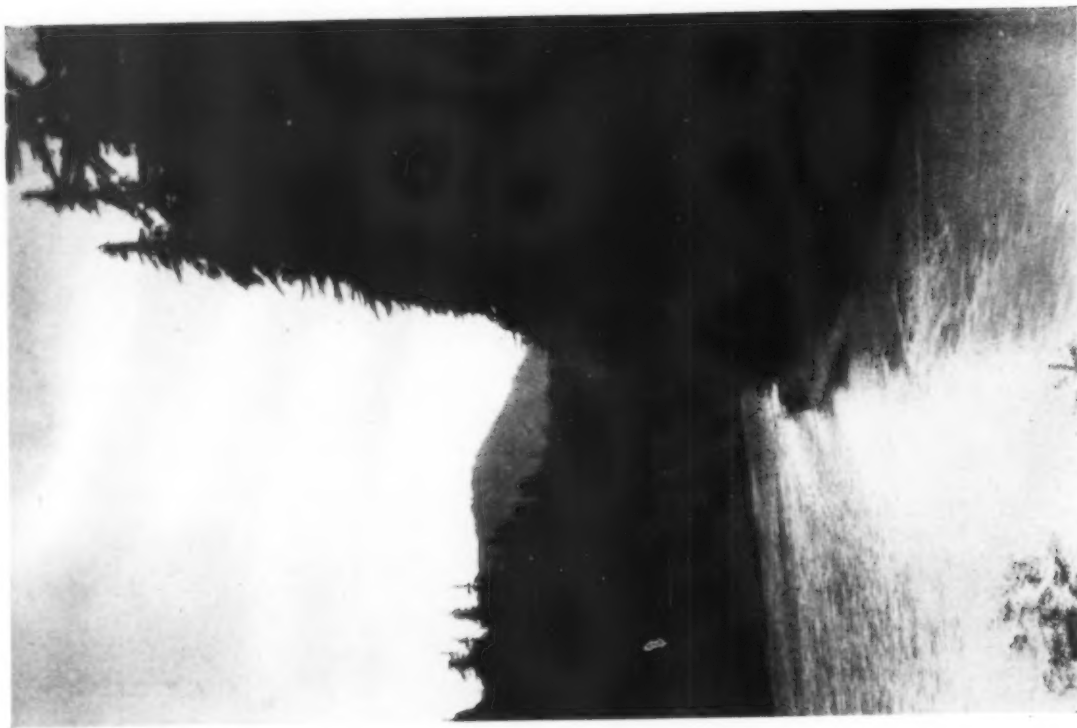
COAST REDWOODS

ISSUED TO ITS MEMBERS BY
THE NATIONAL PARKS ASSOCIATION
WASHINGTON, D. C.

This Number Describes the Coast Redwoods and the Movement to Preserve Them



Photograph by Merrill
FULL LENGTH PORTRAIT OF COAST REDWOOD, SHOWING FIGURE AND DISPOSITION
OF LIMBS. COMPARE WITH GIANT SEQUOIA ON SIXTH PICTURE PAGE



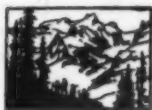
Photograph by H. S. Lawton
COAST REDWOOD FORESTS SEEN IN PROFILE ON THE BANKS OF THE SOUTH FORK
OF THE EEL RIVER. THESE ARE LARGE TREES

JANUARY 1926

NATIONAL PARKS BULLETIN

VOLUME

7



NUMBER

47

FIVE MINUTES WITH THE NEWS

With Comments by the Editor

BY this time most of our national parks are snugly tucked under heavy protecting blankets of snow. Several years ago a Glacier National Park ranger showed us a snapshot of his wife on a mid-January afternoon resting her elbow upon the cross bar of a telephone pole. In another national park a ranger gave us the photograph of his cabin in February, wherein was visible only a thread of smoke emerging from a crater in a snow drift.

Out in the Mariposa Grove of Yosemite and the Giant Forest of Sequoia, stately red columns rise from two or three feet of snow which will deepen steadily as the winter lengthens. Already, no doubt, on the slopes of Mount Rainier, drifts are high which, before spring, will cover the Inn to its chimneys. The Yosemite Valley is probably an entrancing winter spectacle by this time, its towering yellow pines, its prim incense cedars and its majestic Douglas firs bending under shining burdens. At Yellowstone, Old Faithful's white foamy column joins a white earth with a sky of billowing steam; and the elk, long since down from their lofty summer ranges, are pawing the snow from the levels to reach the buried hay of summer grasses.

But all is not snow bound. Summits are bare under the sweeping of gales which now and then attain appalling speed and power. Wind-swept hill-sides and meadows are bare. The rolling plateau of Rocky Mountain National Park, protected by the Front Range from west-bound storms, is snowy but far from snow-bound. There, winter sports begin next month.

Concerning the Primitive

In this number several articles dealing with primitive nature bear importantly on Secretary Work's conception of education as

a prime objective in administering our national parks.

One of these articles pictures the amazing Redwood forests of the northern coast of California, where three men, in 1917, dreamed a national park. There is none there yet, but the Save the Redwoods League has collected two million dollars and purchased many fine tracts. The League is only seven years old. Let us give the youngster a chance.

Far different, indeed, is the forest there evolved by the ages from the primitive deciduous forest saddling the highest ridges of the Great Smokies, described in our November number, where more than a hundred and thirty tree species have produced a spectacle of infinite variety of form, color and posturing. The forest on the Eel River of California consists of one species only. There, the Coast Redwood's lust of life and ardent seizure of the soil ruthlessly exclude all others.

Probably the world can show no greater contrast in forest evolution than these two primitive wildernesses. They will become invaluable contributions to our National Parks Museum of Nature's unaltered handiwork.

But We Must Hold Our Heritage

Recently *American Forests and Forest Life*, the organ of the American Forestry Association, has opened discussion concerning the preservation of a few remaining samples of the wilderness. We must come to it, or precious possessions which time can never replace will pass forever before the overwhelming rush of a popular passion for out-of-doors, which, awheel at sixty miles an hour, threatens to leave no solitudes.

A nation of enthusiasts, habitually we rush our ever

SUPPORTING SECRETARY WORK'S POLICY

The members of the American Association of Museums having been informed of the action taken by the Secretary of the Interior, Dr. Hubert Work—to the end that the intellectual improvement of the people of our country shall be the outstanding purpose of our great national parks—the Executive Committee, acting for the Council of the Association, wishes to express its appreciation to the Secretary for the action he has taken.

In doing this, it wishes also to mention that the American Association of Museums, in its efforts to explain to the millions visiting the national parks the significance of the phenomena that Nature so dramatically displays, already has met with the most cordial and helpful co-operation on the part of the Director of the National Park Service, Mr. Stephen T. Mather, and all members of his administrative staff.

Furthermore, it calls attention to the fact that it has received liberal financial assistance from the Laura Spelman Rockefeller Memorial, and from other sources, enabling it to initiate an educational program in the Parks worthy of the majestic examples of the Creator's handiwork therein displayed.

CHAUNCEY J. HAMLIN,
President.

succeeding crazes to their extremes—and as far beyond as the reaction of common sense will permit. Each popular craze becomes, in its turn, a popular insanity. Just now we are motormad, and everything in the path of the speeding Juggernaut must, for the time being, fall.

In time, of course, outdoor recreation, studied, organized and controlled, will settle into normalcy as a new, powerful and beneficent element in the well-being of this nation. Until then, grave dangers attend our remaining wildernesses. A new school of enthusiastic planners even suggests throwing our National Parks System into the common recreational pot by breaching its protective walls for the admission of areas which are neither examples of the primitive nor scenically extraordinary, but of such stuff as State parks and cut-over forests, State and National, are made of.

Such a policy, resisted successfully in past years, may not be so easy to hold back in these days of unthinking recreational enthusiasm. The title "National Park" has become perhaps too famous, too desirable to local pride, too profitable to local communities as a slogan for attracting paying patronage. Through the door, if opened, inevitably will crowd a score or scores of others, and, with the System's loss of primitive quality, how long shall we be able to maintain the primitive quality of our Yellowstone and Glaciers, which are so strenuously sought by the defacing hand of industry?

Just Common Sense

Because the automobile is rapidly possessing all outdoors, is it necessary to destroy the standards and safeguards of our only educational reservation system—which is already recreational in the highest degree?

Is it necessary, at irreparable loss, to dilute its primitive museum values with areas of the kinds which State Parks are made of?

Is it necessary to discourage State Park development by tempting communities to enter their cut-over mountains into the lists for a more profitable classification at the upkeep of the National Government?

We leave it to the common sense of the American people.

Upbuilding Plus Defending

Five years ago we who defend the National Parks System were charged with opposing the onward march of prosperity. It wasn't true.

Now the new enthusiasts charge us with opposing the forward rush of out-door recreation. It isn't true.

What is true is this—that, before the National Parks System can be completed and turned to its highest usefulness, it must be saved, not only from those who would dump it into the channels of business, but from those who, out of mistaken conceptions of its plan and purpose, would reduce it to the general level of the country's playgrounds.

During this period, National Park making necessarily is two-fold: upbuilding and defending. As with all great public works, the upbuilding is slow and silent. The defending needs be swift and sometimes noisy. The great fact in the situation is that, behind the barrage of defense, the building goes steadily on. The defending will be forgotten. The Temple to Nature, builded to plan, will last forever.

Education Plus Recreation

No wonder Secretary Work has seen the National Parks System as a popular educational institution! No wonder he has advanced education to a place of equal importance with recreation in its administration!

Not at all that education should supplant recreation, as

a few have feared, for the two go hand in hand, each supplementing and increasing the value and the public enjoyment of the other.

Surely, no one capable of enjoying out-of-doors may go to our National Parks to fish, or hike, or camp, or ride the trails, or look at extraordinary scenery, or even mingle with their fellows in motor camps, without appreciating an administration which will bring insistently to his attention the meaning of the spectacles of forest and water, mountain and canyon, there, and nowhere else, to be seen unmodified by the hand of man.

Secretary Work's new educational policy does not mean education versus recreation, but education and recreation travelling hand in hand.

A National Wilderness Policy

By all means let us foster a national wilderness policy—if only, in the event of the National Parks System's submersion in the still uncontrolled flood of recreational super-promotion, to discover a classification for the preservation of some samples of this beautiful and very wonderful earth as God made it.

Apart from this, there are many other reasons why we should carefully consider a national wilderness policy. There remain a few exquisite wilderness bits outside our National Forests and Parks—here and there some acres of primitive forest in the immense mountain regions of the East from which, elsewhere, the primitive has long passed; here and there a few greater regions in the West, eddies among the rushing currents of travel. These should be identified, listed, protected.

Another article in this number to which we call attention is the chapter reproduced from a recent book by two Californian zoologists. They point us out the interrelation of living things in the primitive wilderness. It will help our observation, our comprehension, our enjoyment of nature everywhere. Also, it suggests a policy applicable to national park administration, of which we should take careful note.

National Conference on Out-Door Recreation

The President's Committee on National Outdoor Recreation has invited the National Conference to sessions in Washington on January 20 and 21.

It will be the first national gathering since organization in May, 1924. But much has been accomplished meantime of sound value and wide-reaching usefulness. The field of work has been analyzed, and surveys started to determine recreational opportunities of all kinds throughout the country, so that planning may rest upon knowledge. Differences between national bureaus which administer recreational lands have been largely dissipated. A spirit of cooperation has been fostered among workers in all departments of recreational activity, National, State, county, city, village. A definite national policy has already begun to emerge.

January's convention will be focused upon one subject: Federal and State responsibility to cooperative out-door recreation. The subject is especially timely just now.

PREHISTORIC MOSAICS

While repairing the walls of the Casa Grande Ruin, a prehistoric National Monument in Arizona, three pieces of mosaic, a pair of perfectly matched pendants and more than nine hundred shell beads have been found.

The largest of the mosaics represented a turtle, and contained 1,129 stones. The larger of the two birds, measuring four and a half inches from tip end to tip end, contained 492 stones, each pyramidal in shape.

GREATEST REDWOODS RESERVATION NOW IN SIGHT

Arrangements Making to Purchase Bull Creek Flat, Two Hundred Miles North of San Francisco, believed to be as Majestic a Primitive Forest as any which has Existed since the Beginning of Time

SOMETIMES dreams come true; it is when the dreamers put brains, wisdom, work, courage and persistence into realization.

In 1917, three men who were exploring, in northwestern California, the most extraordinary forest that the world, perhaps, has ever produced, dreamed of a parkway hundreds of miles long skirted by colossal trees saved permanently from the lumberman's axe. They visioned a Redwoods National Park at the center of this majestic highway, to consist of the noblest forest of them all; and, tributary to it, leading up from north and south, a procession of lesser Redwood parks, State, County and perhaps private.

Eight years have passed. This noble dream is far from fully realized, but much has been done. The highway is perfected. Many of the lesser groves have been acquired, several by gift of the lumbermen themselves. And now comes the announcement by Dr. John C. Merriam, President of the Save the Redwoods League, that arrangements are concluding to purchase the central section, ten or twelve thousand acres in extent. Three quarters of a million dollars are pledged already toward its achievement.

Fulfillment of the dream now becomes a certainty, which is the deeper significance of this announcement. These men have gathered around their planning thousands of others; they have raised nearly two million dollars; they have built an organization which is known in every considerable community in the country; and they have imparted an impetus to the movement which nothing short of success can check.

An Incomparable Possession

These Coast Redwoods, incomparable among forests, are a national possession no matter who holds title to the lands. No one thinks of Yellowstone as Wyoming's, of the Grand Canyon as Arizona's, of the Rockies as Colorado's or Montana's, or of the Mississippi as belonging to the States which border it. These are American Redwoods, not Californian, and there are no others remotely like them in the world.

Originally 1,406,393 acres (2,230 square miles) of Redwoods paralleled the Pacific Coast in a ribbon twenty miles wide and four hundred and fifty miles long. Today, more than a third have fallen before the axe.

In 1901, an early impulse toward protection resulted in the California State Redwood Park in the Santa Cruz mountains south of San Francisco, which, by 1918, had grown to 9,000 acres. Meantime the lumbermen had reached the super-stands on the northern coast, making immense inroads, and it is there that the Save the Redwoods League began to accumulate properties along the coast highway. The Humboldt State Park on the South Fork of the Eel River was one of its promotions, the State, at its solicitation, appropriating the purchase money. Other groves whose purchase it secured have been presented to the State for administration.

Redwoods Preserved for Posterity

Splendid though the League's achievement, nevertheless the total of the people's Redwood acquisitions for preservation amount to little more than one per cent of the original total. Much remains to do. The following table

from the League's last annual report, tells us what has been accomplished to date toward an adequate exhibit:

State Parks:

California State Redwood Park (1901-1918)...9,000 acres
(Big Basin, Santa Cruz County)

Humboldt State Redwood Park (1919-1925)...2,573 acres

Del Norte State Redwood Park (H. S. Graves Grove).....157 acres

National Monument:

Muir Woods (Gift of William Kent) (1908)....537 acres

County Parks:

Sonoma County (Armstrong Woods).....495 acres

San Mateo County (McCormick Tract) (1923)..310 acres

City Parks:

Eureka.....40 acres

Oakland (1923).....180 acres

Total Preserved by Public.....13,192 acres

The Bull Creek Flat

The Redwoods Highway, already celebrated, extends from San Francisco north, paralleling the coast, to Grant's Pass in southern Oregon. It is hoped to retain, wherever Redwoods occur, at least a forest border, and as often as possible a considerable stand of trees. Through that part of the Belt where Redwoods attain their greatest luxuriance and size, a reach of this highway is skirted with groves already acquired.

At a horseshoe bend forty-five miles south of Eureka, where Bull Creek enters the Eel River, the forest reaches its climax of magnificence in the Bull Creek Flat and, across the river, the Dyerville Flats.

"Many scientists and world travellers have declared," says Dr. Merriam, "that in Bull Creek Flat the Coast Redwood is found in its highest form of development. The largest and tallest of the *Sequoia sempervirens* and also the most symmetrical are found in the main Bull Creek Flat. It is stated that probably nowhere since the beginning of time has there existed a more majestic forest. Lumbermen are agreed that the average density of the timber here reaches the maximum known in these forests. It is with these facts in mind and also because of the unusual recreational opportunities afforded that the League will support the plan for saving this area."

Majestic Borders of the Eel River

"The owner of this timber, the Pacific Lumber Company, one of the largest operating concerns in the lumber industry, is cooperating with the Save the Redwoods League in order to determine a fair valuation of the area to be purchased from them and taken over for public use. Conferences to this end between officials of the League and the Company are now taking place. It is expected that within a short time the exact price at which this property is to be purchased will be determined, and then it will rest with the interested public to secure funds necessary for setting aside this magnificent area."

The South Fork of the Eel River, clear, rippling and trout-haunted, is seventy-five miles long, rising in the Blue Rock Ridge of Mendocino County and flowing north through Humboldt County between ranges of low mountains. In Humboldt County are the greatest stands.

North of this, just below the Oregon boundary, other stands of great majesty gather on the shores of the Smith River, another mountain stream of unusual beauty.

South of San Francisco, the Redwood ribbon resumes its winding course through the Santa Cruz and Santa Lucia Mountains. Here, with lessened rainfall and fog, Redwoods divide these forests with the lowland Firs, Coast Hemlock, Cedars and many lesser trees. But they are always the dominant race, and, whenever conditions of protection and moisture favor, again become the sole possessors of the soil.

Patricians of the Forest

The Redwood family, of which seven genera have been identified in different parts of the world, is represented in California by the Sequoias, whose two species are the most remarkable trees in many respects in America, and in some respects in the world. They are our tallest trees, our trees of heaviest trunks and noblest presence, and our trees of greatest age. Large individuals of both species are unquestionably "the greatest and oldest living things."

They are patricians, tracing their lineage from the dim vistas of creation. In Tertiary times their ancestors were distributed over the northern parts of the earth. Forty species have left their fossil remains.

The distinction between the two celebrated species of today, popularly called Coast Redwood (*Sequoia sempervirens*) and Giant Sequoia (*Sequoia gigantea*), is plain to all observers of both; nevertheless, east of the Pacific coast, confusion of the two appears to be general. Especially at this time, with a nation-wide campaign in operation to save the finest groupings of Coast Redwoods from the axe of industry, the distinction becomes important.

Differences Between the Species of Sequoia

In general, Coast Redwoods run to higher stature than Giant Sequoias, but the giant species is thicker-trunked and individually more majestic.

Redwoods inhabit only a narrow belt in the Coast Range of California below two or three thousand feet in altitude, sometimes nearly at sea level, while Giant Sequoias inhabit the main forest belt of the Sierra between five and seven thousand feet in altitude. The latter are the "big trees" of Yosemite and Sequoia National Parks.

Coast Redwood foliage occurs in flat sprays not so very unlike those of some Firs, while Giant Sequoia leaves are "awl like" in long filaments in heavy pendant plumes.

Coast Redwood crowns are usually pointed like those of Spruce and Fir, but become slightly rounded with age, while Giant Sequoia crowns are pointed only in youth and early become rounded; in maturity they are often shaped like inverted bowls.

Coast Redwood branches are many, inclined upward near the top, the lower branches inclining downward; while the Giant Sequoia's middle and lower branches usually drop away, and those supporting the crown become exceedingly heavy, thrusting horizontally outward and bending upward like elbows.

The most important distinction is their habit of growth. Coast Redwoods, like Spruce, are forest communists; Giant Sequoias are forest individualists. Coast Redwoods, growing rapidly from seeds, stumps and even detached roots, cluster in close, heavy forests, in places thick as wheat, excluding by their overpowering vigor most other trees, and, in considerable areas where conditions specially favor them, all other trees. Giant Sequoias on the other hand appear in often widely separated "groves," some containing thousands, others only half a dozen. In these groves they appear in association with other important

forest trees, frequently, though not always, well separated from those of their own species.

Coast Redwoods, then, are thought of only in mass, Giant Sequoias only as individuals. The Redwood forests are the most tremendous and impressive forests in the world. Sequoia groves are merely places in the immense forests of the Sierra's main forest belt where Giant Sequoia trees occur in company with White Fir, Sugar Pine, Incense Cedar and others, each, usually, itself a lusty example of its own kind.

In the famous Giant Forest of the Sequoia National Park, for example, all species found there are unexcelled, each of its kind. It is a giant forest in the broadest sense.

Giants and Patriarchs of the Forest

Much misinformation is abroad concerning the sizes and ages of both these species. The facts follow.

Jepson quotes 100 to 340 feet as the height of the Coast Redwood. Sudworth gives 190 to 280 feet as the height of average large trees, with diameters from 8 to 12 feet; occasional exceptionally large trees, he says, run from 300 to 350 feet, with diameters of 18 to 20 feet. Dr. Merriam writes that the largest tree he has seen had a diameter of "near 20 feet." The tallest Coast Redwood estimated by an experienced forester measured 380 feet. Diameters are taken about twelve feet from the ground so as safely to avoid the swellings of the broad base.

Concerning Giant Sequoias, Jepson quotes the circumference of the famous General Sherman Tree in the Sequoia National Park as 82 feet, 4 inches, or, by calculation, 26.2 feet in diameter. He quotes the diameter of the General Grant Tree, which has a little national park all its own, as 27 feet, and of the Grizzly Giant in the Mariposa Grove of Yosemite National Park as nearly 23 feet. The much greater diameter of this celebrated trio as stated in government circulars were measured by railroad officials around their enlarged bases on the ground. Sudworth quotes the height of average large Giant Sequoias as 250 to 280 feet, with diameters from 12 to 17 feet; and the height of occasional exceptional trees as 300 to 330 feet, with diameters from 20 to 27 feet measured well above their bases.

"The Oldest Living Things"

Concerning age, Jepson quotes 400 to 1300 years for the Coast Redwood, with occasional trees perhaps "equaling the highest definite ages determined for the Sequoia." He quotes the Giant Sequoia's age at 400 to 1500 years, with "a few showing as high as 2200 to 2300 rings." Sudworth says that several Giant Sequoias now standing may be 4000 years old, and that "very many trees from 12 to 18 feet in diameter show ages from 1800 to 2500 years."

The fact appears to be that the annual rings of exceptionally large Sequoias cut in past years have, with one exception, never been counted. The only authoritative statement concerning these that I have found is a counting by John Muir which showed "more than 4000 rings." From the slender data available, it is a fair guess that the General Sherman Tree may equal this age, but comparison of the size of a living trunk with that of a cut tree whose rings have been counted is unreliable because comparative moisture and other conditions affecting the growth of each are unknown.

The Preservation Movement and the League

Previous to 1917, Coast Redwoods were known to the people chiefly by the groves near Santa Cruz, and the Muir Woods across the bay from San Francisco which William Kent gave to the nation as a national monument in 1908. Both of these are fine groves of splendid trees, but neither illustrate the luxuriance and grandeur which Coast



Photograph by E. R. Freeman
WHERE BULL CREEK ENTERS THE EEL RIVER. THE STANDS OF GREATEST REDWOODS LIE ON THE RIGHT OF THE PICTURE
WELL BACK FROM THE WATER. NOTE THE CHARACTER OF THE NEAR-BY FOLIAGE



Photograph by H. C. Tibbitts

CHARACTERISTIC REDWOOD FOREST FROM WHICH OTHER SPECIES HAVE BEEN EXCLUDED BY THE VIGOR OF REDWOOD GROWTH



IN BULL CREEK FLAT. FROM LEFT TO RIGHT, JOHN H. EMMERT, PRESIDENT PACIFIC LUMBER COMPANY, HUBERT WORK, SECRETARY OF THE INTERIOR, AND STEPHEN T. MATHER, DIRECTOR NATIONAL PARK SERVICE



IN BULL CREEK FLAT. DR. JOHN C. MERRIAM, PRESIDENT CARNEGIE INSTITUTION OF WASHINGTON, WHO, AS PRESIDENT OF THE SAVE THE REDWOODS LEAGUE, IS BUILDING UP AN EXTRAORDINARY GROUP OF REDWOOD RESERVATIONS

Redwoods attain in immense stands growing under conditions most favorable for their fullest development.

The Santa Cruz Redwoods are associated with other forest trees. So also are the Muir Woods, where the Bay in its most graceful and sometimes fantastic forms adds much to the forest interest. Far in the north, however, where heavy rainfall and frequent fog combined with helpful soil favor maximum growth, Redwoods crowd out all others, creating forests of magnificence unbelievable until actually seen.

The Pioneers

Into these forests, which were then known to comparatively few besides lumbermen, these lovers of primitive nature ventured in the summer of 1917. They were Henry Fairfield Osborn, President of the American Museum of Natural History, Madison Grant, President of the New York Zoological Society, and John C. Merriam, President of the Carnegie Institution of Washington. They saw, they dreamed, they planned. To their call for preservation from the rapidly approaching axe of a few supreme examples to carry the story of nature's munificence down to posterity, many gathered.

The Save the Redwood League was organized, and later, in 1920, incorporated. From the first, it has endeavored, through nation wide publicity, to make clear the need for preservation of a representative area of the primeval forests. At the same time, appeals have been made for contributions for the purchase of Coast Redwood areas, to be set aside for public use, and for memberships to support the general work of the League. There are now over five thousand members from all parts of the United States, with a representative number also in foreign countries.

Raising the Money

The valuation of the Redwood areas thus far preserved through the efforts of the League is in excess of a million dollars, and consists for the most part of a stretch of timber extending for fifteen miles along the Redwood Highway and comprising close to three thousand acres. In addition, funds in excess of three-quarters of a million dollars are available for the purchase of further Redwood areas.

Since the work of the League began, the state of California has appropriated \$300,000; Humboldt County, \$110,000; Del Norte County, \$5,000; and private gifts in money with which to buy Redwood lands, have been made by individuals and organizations. Among those who have made specially substantial contributions are: Mrs. Zipporah Russ, California; Dr. John C. Phillips, Massachusetts; George Frederick Schwartz, New York; William Kent, California; Stephen T. Mather, Washington, D. C.; Mrs. Newell Knight French; and Edward E. Ayer.

The California State Federation of Women's Clubs has raised a fund of approximately \$50,000, which will be applied toward the purchase of a grove on the Redwood Highway, probably during the coming year. A number of memorial groves have been established by individuals, including the Franklin K. Lane, Bolling, Gould and Hickey Memorial Groves; and several groves have also been named for living men of note, such as the recently established Henry S. Graves Grove near Crescent City. Several lumber companies have shown their interest in the movement by making outright gifts of Redwood timber-lands to the State for park purposes.

Joseph D. Grant of San Francisco, Duncan McDuffie and J. C. Sperry of Berkeley, Dr. W. L. Jepson of the University of California, William Kent who gave the nation the mine, and Newton B. Drury are among those who devote much time and effort to the work.



SHOWING THE ENTIRE RANGE OF COAST REDWOODS

MODERNIZING BOUNDARIES OF NATIONAL



PROPOSED BOUNDARY CHANGES IN YELLOWSTONE NATIONAL PARK

WE publish here maps of proposed boundary reorganization of three of our principal National Parks: Yellowstone, Rocky Mountain and Grand Canyon. The alterations are the result of years of experience and study, and will very greatly improve the parks. There will be a net gain of area as well as value.

Our older national parks were laid out when the high mountains of the West were not well known, nor the administrative problems foreseen which have accompanied the nearer approach of population and the occupation of neighboring mountain country by industrial agencies. When rectangular Yellowstone was created in 1872, the wilderness east, south and west of the canyon and geyser-basins had not even been explored. This was not true of the environment of Mount Rainier National Park when Congress created it in 1899, but few except surveyors and prospectors were familiar with it.

Making and Reshaping National Parks

The boundaries of the older parks were often established arbitrarily, following ruler lines drawn in far-away offices. Much necessarily was excluded and included which did not square with national park conceptions of later and wiser days. Administration and protection of national park areas enclosed by the older boundaries are often difficult, and frequently features which are desirable within the parks lie just outside them.

In making the later national parks, like Rocky Mountain

and Grand Canyon, clash of conflicting interests have frequently produced boundary lines which soon afterward proved inadequate or undesirable. For example, in Rocky Mountain National Park, which was created in 1915 after a dozen or more years of more or less tempestuous promotion, a large acreage of unscenic forest was unnecessarily included in the north, and the superb Arapahoe Mountain country in the south was cut out at the last moment to pacify mining interests which afterward found no metal there worth the taking. For another example, thirty-three years were required to get the Grand Canyon National Park, which was created in 1919, and almost immediately its boundaries were found inadequate.

The Improved Yellowstone

The proposed changes in Yellowstone National Park, as shown in the map herewith, have special interest to many. The addition shown in the northwest corner brings into the park a valuable petrified forest and other fossil-bearing lands; that in the northeast corner adds the headwaters of Pebble Creek, the new line following natural topographic boundaries. The inclusions and exclusions on the east, by giving the park a mountain summit boundary, make for better administration and protection. Better administration is also the reason for the exclusion shown on the south border, leaving the Snake River the new boundary.

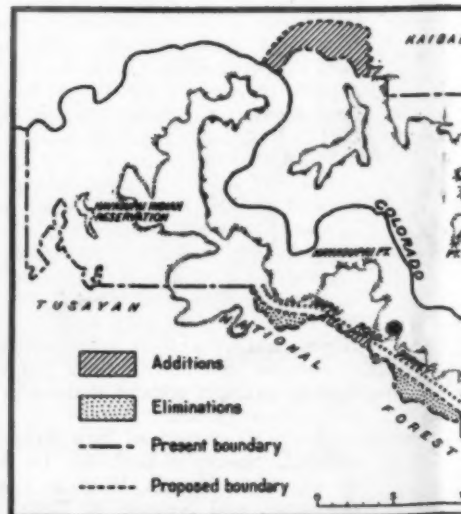
The entire headwaters of the Yellowstone River will be taken into the park at the southeastern corner, including several glaciers and the famous Thoroughfare Plateau, a primitive wilderness of remarkable beauty which is the resort of many wild animals. This region will not even be approached by roads.

On the south, the Teton Mountains, or rather their eastern scenic half, are to be added as an area separate from the main park. The intervening region will remain in the National Forest because it carries a thoroughfare necessary for National Forest administration. It seemed better for Yellowstone Park under the conditions to have this out of the park than in it, and the Tetons can be as well administered as a close-by area as it could be if connected by an otherwise useless strip of park land.

Yellowstone is a volcanic incident in a granitic mountain system. The addition of the magnificent granite monument of the Tetons will complete the picture geologically and scenically. Incidentally, these changes will add four hundred and seventy square miles to the national park area. Yellowstone will then contain 3,818 square miles.

Mount Rainier

The alterations in the boundaries of Mount Rainier National Park are slight. They are confined to



PROPOSED ADJUSTMENTS IN BOUNDARIES

NATIONAL PARKS TO MEET TODAY'S NEEDS

to the substitution of natural for arbitrary lines at three of the corners, and to the inclusion of the Opanapech Hot Springs at the southeast corner.

Rocky Mountain National Park Greatly Bettered

The improvement which the new boundaries will make in Rocky Mountain National Park is greater even than the improvement in Yellowstone. The new portions will add much to its magnificence, variety, charm, and educational effectiveness.

The abandonment of the wooded lands of lower elevations in the north and southwest, as shown on the map, will be a gain because they were unnecessary to the park's message. There will remain abundant finer forest which is characteristic of the region and the altitude within the re-organized boundaries.

No one can see Rocky Mountain National Park in the only way it is possible to secure the least idea of it, which is from the trails, without amazement that the two areas now to be added were not included at the beginning.

In the northwest, the added horseshoe of splendid mountains formed by the Front Range on its east and the Never Summer Range on its west makes a gorgeous spectacle as seen from within the present park area. The region enclosed within this horseshoe will make a useful and extremely beautiful exhibit, far different from the Wild Gardens and Wild Basin on the east of the Front Range, but in its own different way fully their equal. Within this exquisite enclosure scores of contributing streams combine to form the Colorado River, which later courses through the Grand Canyon. The lower altitude also contributes useful variety to the forest exhibit.

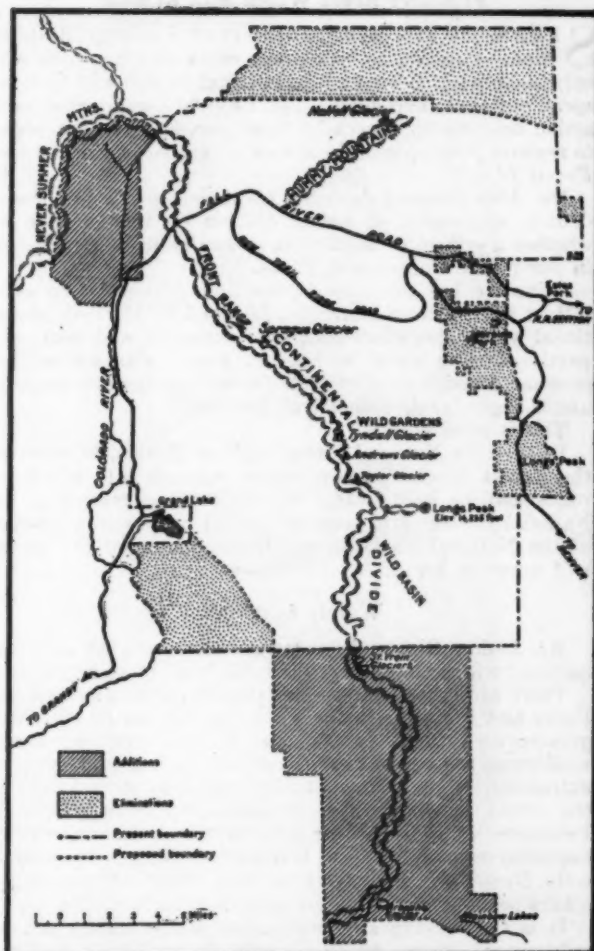
The addition planned in the south carries the Front Range to its southern climax in Arapahoe Mountain, to whose steep-sided pinnacled summits clings the Arapahoe Glacier, largest in Colorado. Here are the most rugged and finest mountains in the park excepting only the Long's Peak group; also, they add other phases of glaciation to the park's already extraordinary catalogue.

The improved Rocky Mountain National Park will assume a place in the front rank of our National Parks.

There will require only a short crest road from the base of Trail Ridge to a point west of Long's Peak, and trails to make the added features accessible, to open thoroughly a national park which at last will represent adequately the gigantic mountain system whose name it bears.

Grand Canyon

The proposed additions to Grand Canyon National Park on the north, both of them from the Kaibab Forest, not only add to administrative equipment but importantly increase the



PROPOSED BOUNDARY CHANGES IN ROCKY MOUNTAIN NATIONAL PARK

forest background of this extraordinary desert spectacle. They will accommodate extensive camps which in time will develop on the north rim. They also include Little Park, on whose broad opens deer may be seen in large numbers at the day's close. But V. T. Park will remain in the National Forest.

The area to be added to the southeast corner will make for better administration, and other south side additions and subtractions shown on the map will substitute a more advantageous natural boundary from the administrative point of view.

Park and Forest Services in Agreement

All the changes planned in these four parks result from years of study. Where agreement lacked between the National Park Service and the Forest Service, compromises were effected through the Coordinating Commission of the National Conference on Outdoor Recreation, which was recently appointed by the President's Committee. The directors of both bureaus are members of the Commission.

Boundary changes, like original boundary creations, require an act of Congress.



BOUNDARIES OF GRAND CANYON NATIONAL PARK

FOR A WILDERNESS POLICY

To Protect From Unappreciative Encroachment Rare Primitive Areas Which Still Remain

SPEAK OUT!" says the American Forestry Association. "Action to retain our spots of wilderness will only come when those who believe that this should be done speak out again and again. Mr. Leopold's appeal for such action deserves an expression from you, and you are urged to register your opinion in letters to *American Forests and Forest Life*."

Mr. Aldo Leopold describes his article as "a plea for a definite expression of public opinion on the question of whether a system of wilderness areas should be established in our public Forests and Parks."

"Can we not for once foresee and provide?" he asks. "Must it always be hindsight, followed by hurried educational work, laborious legislative campaigns, and then only partly effective action at huge expense? Can we not for once use foresight and provide for our needs in an orderly, ample, correlated, economical fashion?"

This is good sense.

In the Gila National Forest in New Mexico, he tells us, the Forest Service has designated an area into which no roads shall be built; many fine wildernesses remain in the National Forests, and there are broad regions in a number of the National Parks in which the scream of the motor will never be heard.

Widely Scattered

Mr. Arthur Ringland has suggested developing a formal national wilderness policy. It is the way to go about it.

There are other wildernesses than those in the National Parks and Forests. In the Public Lands, which still have greater area than the National Forests, will be found wilderness regions of charm and beauty. A wilderness of extraordinary luxuriance blankets the lofty steep ridges of the Great Smokies where a national park is proposed. Primitive wildernesses far less in size but wonderfully beautiful remain in New Hampshire, Maine, Massachusetts, New York, Pennsylvania, and other eastern states; others perhaps in the middle north.

It is the touring automobile, the deadly enemy of the wilderness, against which it must be protected, not the camper and the trampler and the rider of the trails. Saving these wildernesses consists in shooing road-building in other directions.

By all means let us get about surveying our remaining primitive wildernesses and planning the continued isolation of the best of them. We need them now, and coming generations will justly blame us if we save none for them.

HOW THIRSTY IS A TREE?

An interesting inquiry undertaken in the Rocky Mountain Forest Experiment Station in Colorado has for its object the discovery of how much water different species of trees will absorb in different soils.

Seven hundred yearling seedlings have been planted in tin cans. To measure the amount of moisture the little trees require, the cans are sealed in around the seedlings, leaving only a small covered opening where water in measured quantities can be poured in. The dampness or dryness of the soil in the cans may be estimated at any time by weight. No water can escape except by transpiration.

Seedlings will be pulled up, weighed, and photographed from time to time during the next four years. About 40 plants of each species are expected to be "in at the finish."

ORGANIZING RECREATION

National Conference on Outdoor Recreation Will Consider State and National Responsibilities

INVITATIONS have been sent to the organizations composing the National Conference of Outdoor Recreation to send delegates to the second general convention.

The first conference was held in May, 1924, since when the Executive Committee then chosen has carried out work of importance nothing short of extraordinary. The report will show recreational opportunities throughout the country in an advanced stage of organization, and a national program emerging.

The special subject of the coming meeting will be State and National responsibilities. Here is the call:

Text of Official Announcement

The President's Committee on Outdoor Recreation has extended an invitation to the National Conference on Outdoor Recreation and to the members of the General Council to meet in Washington, D. C., January 20 and 21.

The sessions of the conference are public and will be held in the Assembly Rooms of the United States Chamber of Commerce beginning at 10:00 A.M., Wednesday, January 20. There will be an afternoon session at the Chamber and an evening smoker session at a place to be announced later. Sessions will continue throughout Thursday concluding with a meeting of the General Council for the election of officers for the new year. The conference will be devoted to the consideration of Federal and State responsibilities in the outdoor field and the determination of a program for the consideration of the President's Committee.

On Thursday evening at half past seven at the Mayflower Hotel a formal dinner will be given by the Conference in compliment to the President's Committee. Honorable John Barton Payne will preside and Honorable Herbert Hoover, Secretary of Commerce, will speak.

ARTHUR RINGLAND, *Executive Secretary*.

LANDLOCKING SALT-WATER SALMON

The National Park Service has planted 60,000 young salt-water salmon in Emerald Lake, Rocky Mountain National Park. The eggs were brought from Oregon and hatched in Estes Park.

TO JOIN THE NATIONAL PARKS ASSOCIATION

and do your part in the important work of this Association (see page 12), mail your name and address to the Treasurer, 1512 H Street, N. W., Washington, D. C., enclosing your check for first year's dues. You will receive regularly the *National Parks Bulletin* and other publications of the Association, and will soon find your own working place in the ranks of service.

Annual membership\$3.00

Sustaining membership\$25.00



IN PLACES, REDWOODS GROW LITERALLY AS THICK AS WHEAT. THIS IS WHERE THE COUNTY ROAD ENTERS THE BULL CREEK FOREST, WHICH SOON WILL BE PURCHASED FOR PERPETUAL PRESERVATION



Photograph by Pillsbury
 FOR COMPARISON WITH COAST REDWOOD, STUDY THIS PORTRAIT OF GIANT SEQUOIA.
 THIS IS THE MASSACHUSETTS TREE OF THE MARIPOSA GROVE



Photograph by Pillsbury
 THE GIANT SEQUOIA OF THE HIGHER ALTITUDES. THIS IS THE CELEBRATED GALEN
 CLARK TREE, THE FIRST DISCOVERED IN THE YOSEMITE REGION

THE INTERRELATIONS OF LIVING THINGS

With Special Reference to Preserving the Balance of Life in National Parks

The following chapter from a recent notable book, "Animal Life in the Yosemite," bears importantly upon questions of policy in connection with the administration of our national parks, in whose untouched primitive wilderness some attempt is made to preserve the balance of life. It is reproduced here with the permission of the authors, Joseph Grinnell and Hracý Irwin Storer, and of the publishers, the University of California Press.

THAT forests afford the means of existence for a great number of animals, with reference to both species and individuals, is a trite statement which no one is likely to question. We would offer, however—albeit with some caution—a second statement: Forests depend, for their maintenance in the condition in which we observe them in this age of the world, upon the activities, severally and combined, of the animals which inhabit them.

Beginning at the root of the matter, in a double sense, mammals which burrow are of importance to forests. The picket gophers, the ground squirrels, the moles and the badgers, are natural cultivators of the soil, and it is, in considerable degree, the result of their presence down through long series of years that the ground has been rendered suitable for the growth of grasses and herbs, and even of bushes and trees, particularly in their seedling stages. A host of insects, also, which live in the ground at least part of their lives, contribute to rendering soil more productive of vegetable life.

Vegetable materials, leaves, twigs and trunks of trees as well, contribute to soil accretion by reason of their being torn to pieces by animals, their particles scattered by animals, and these finally overlaid by the earth brought up by animals from deeper substrata. The animals which figure conspicuously in this process are the woodpeckers, chickadees and nuthatches, the tree squirrels, chipmunks, and porcupines, the burrowing beetles, the termites, and the ants, and then the burrowing and burying mammals already referred to. This process of incorporating humus into the soil, accomplished in large measure by animals, is of direct and lasting importance to the forests.

We do not make any claim that all animal life is directly beneficial to the forests. For many insects may be seen to feed upon the foliage, the bark and even the live wood of individual trees, and in so doing such insects shorten the lives of these trees, or even sometimes kill them outright within a single season. It is obvious that a sudden over-abundance of such destructive insects would bring serious injury to the forests.

But observation has led us to recognize, in certain groups of birds, natural checks to undue increase of forest-infesting insects. Insects of one category inhabit the bark of a tree or the layers of wood immediately beneath; others pursue their existence among the smaller twigs; still others live amid the foliage of the trees. In all these cases the substance of the tree is levied upon by the insects for food, and if levied upon unduly, the trees suffer commensurately. But, as counteracting factors, we find corresponding categories of birds, each specially equipped to make use of one of these categories of insects. The woodpeckers, nuthatches, and creepers search the tree trunks and larger limbs; the chickadees comb the finer twigs; while the kinglets and warblers go over the foliage leaf by leaf. The great value of the bird to the tree comes when the harmful insects have begun to multiply abnormally; for birds are well known to turn from other food sources and concentrate upon the one suddenly offering in generous measure.

It is to the interest of the forest at large that a reserve nucleus of birds be maintained constantly, as a form of

insurance, to be ready at just such a critical time. Incur-sions of insects from neighboring areas, as well as eruptions of endemic species, have probably occurred again and again from remote times. In other words, as we see the situation, it is an advantage to the forest that a continual moderate supply of insects be maintained for the support of a standing army of insectivorous birds, which army will turn its attention to whatever insect plague happens suddenly to manifest itself.

We would claim, then, a nice interdependence, an adjustment, by which the insect and the bird, the bird and the tree, the tree and the insect, all are, under average circumstances, mutually benefited. Such a balance is to be found in the primeval forest, where thoroughly "natural" conditions obtain as a result of long ages of evolution on the part of all the animate things there touching upon one another's lives. These relations may, of course, be entirely upset where man has interfered, directly or indirectly; as, for instance, when he brings in insects or plants alien to the original fauna and flora. Then an entirely new program, one of readjustment, begins.

After a good deal of study, and contemplation of the modes of life of various kinds of animals, naturalists have come to recognize as essential three factors which seem inseparably bound up with the successful existence of any one species of vertebrate animal. These factors are: (1) presence of safe breeding places, adapted to the varying needs of the animal; in other words, depending upon the inherent powers of construction, defense, and concealment in the species concerned. (2) Presence of places of temporary refuge for individuals, during daytime or nighttime, or while foraging, when hard pressed by predatory enemies, again correlated with the inherent powers of defense and concealment of the species involved. (3) Kind of food supply afforded, with regard, of course, to the inherent powers in the animal to make it available.

To say all this a bit more simply, not alone food is necessary to the bird life or the mammal life in our forests, but also safe places for rearing young, and places of refuge when needed, for the grown-up individuals themselves. Referring again to the relationships borne between certain insects, birds, and trees: The White-headed Woodpecker is a species which does practically all of its foraging on trees which are living, gleaning from them a variety of bark-inhabiting insects. But the White-headed Woodpecker lacks an effective equipment for digging into hard wood. It must have dead and decaying tree trunks in which to excavate its nesting holes. If, by any means, the standing dead trees in the forests were all removed at one time, the White-headed Woodpecker could not continue to exist past the present generation, because no broods could be reared according to the inherent habits and structural limitations of the species. Within a woodpecker generation, the forests would be deprived of the beneficent presence of this bird. The same, we believe, is true of certain nuthatches and of the chickadees—industrious gleaners of insect life from living trees. They must have dead tree trunks in which to establish nesting and roosting places, safe for and accessible to birds of their limited powers of construction and defense.

We would go so far, even, as to urge that down timber, fallen and decaying logs, are essential factors in upholding the balance of animal life in forests. Certain kinds of chipmunks, and rats and mice of various kinds, find only in fallen logs homes adapted for their particular ways of living. And these chipmunks and other rodents have to do with seed scattering, with seed planting, and with humus building, again directly affecting the interests of the chaparral, of the young and even the older trees.

It is true that there are some kinds of birds and mammals which at times directly injure trees to an appreciable extent. The birds of the genus of woodpeckers called sapsuckers drain the vitality of the trees they attack. An overabundance of these birds would bring disaster to the forest at large. An overabundance, likewise, of tree squirrels would probably play havoc with certain trees beyond the powers of these trees to meet the crisis.

Just as in the case of the leaf-eating insects of the kinglets in the arboreal foliage, these birds and mammals of the sapsucker and tree-squirrel category are kept in check by other predatory birds and mammals. In the Sierran woods are Great Gray Owls and Spotted Owls, Cooper Hawks, Martens, and Weasels, levying upon the vertebrate life about them, and each equipped by size, degree of alertness, or time of foraging, to make use of some certain sort of prey. The longer we study the problem the clearer it becomes that in the natural forests, which, happily, are being preserved to us in our National Parks, a finely adjusted interrelation exists, amounting to a mutual interdependence, by which all the animal and plant species are within them able to pursue their careers down through time successfully.

The opportunity here to moralize is tempting. If the above course of reasoning be well founded, then, to realize, ethetically and scientifically, the greatest benefit to ourselves from the plant and animal life in Yosemite Park, its original balance must be maintained. No trees, whether living or dead should be cut down beyond what it may be necessary to remove in building roads or for practical elimination of danger, locally, from fire. Dead trees are in many respects as useful in the plan of nature as living ones, and should be just as rigorously conserved. When they fall, it should be only through the natural processes of decay. The brilliant-hued woodpeckers that render effective service in protecting the living trees from recurrent scourges of destructive insects, in other words, in keeping up the healthy tone of the forest, depend in part on the dead and even the fallen trees for their livelihood.

No more undergrowth should be destroyed anywhere in the park than is absolutely necessary for specific purposes. To many birds and mammals, thickets are protective havens which their enemies find it difficult or impossible to penetrate. Moreover, the majority of the chaparral plants are berry-producing and give sustenance to mountain quail, to wild pigeons, to robins and thrushes, to chipmunks and squirrels, and this, too at the most critical times of the year when other foods for these animals are scarce or wanting. The removal of any of these elements would inevitably reduce the native complement of animal life. Nor do we approve, as a rule, of the destruction of carnivorous animals—hawks, owls, foxes, coyotes, fur-bearers in general, within the Park. Each species occupies a niche of its own, where normally it carries on its existence in perfect harmony on the whole with the larger scheme of living nature.

(From "Animal Life in the Yosemite," by Joseph Grinnell and Tracy Irwin Storer, 1924. University of California Press.)

THE WHITE MOUNTAIN GOAT

His Habits Described by Park Naturalist F. W. Schroe of Mount Rainier National Park

BETWEEN two and three hundred White Mountain Goats live upon the shoulders of Mount Rainier within the boundaries of the National Park.

Park visitors, however, rarely see one of the great shaggy beasts. Here in the very southwest corner of their former extensive range the goat are wary and they inhabit such rugged, inaccessible country that it requires some experience and considerable mountaineering ability to approach.

Surprisingly nimble of foot for so heavy-bodied and clumsy-appearing an animal, he is able to negotiate ice and rock cliffs of unbelievable steepness. His size, sure-footedness, herding instinct, and habits of posting look-outs when feeding and of climbing to high vantage points when resting, make the Mountain Goat without question one of the most interesting animals of the country.

Living amid glaciers, rocky crags, precipitous cliffs, and pumice fields, he has a habitat on Mount Rainier the superior of which in scenic grandeur would be very hard to find. This he shares only with such intrepid mountaineers as the Hoary Marmot, the White-tailed Ptarmigan and the Rosy Finch.

Range Between 5,000 and 10,000 Feet

Such a wilderness pasture is beauty itself in the summer time. Myriads of wild flowers, whose delicate blossoms weave tapestry patterns over the small grassy meadows above timber-line and form patches of brilliant color here and there among the rocks, grow right up to the very edge of the grinding ice. But in winter this same pleasant garden becomes a barren waste. Snow lies many feet deep in sheltered areas and raging gales whine over the bleak exposed ridges with arctic ferocity. The White Mountain Goat, however, do not leave their range.

On milder days he climbs to the wind-swept ridges, finds a few lichens and some wisps of dry grass, but when the storm rages anew he returns to the matted growth of trees at timber-line or down into the upper edge of the dense forest where is some protection from cold.

In July and August I have repeatedly found goat or sign of goat as high as nine thousand feet, and I know of several instances where they have climbed as high as ten thousand feet.

One of these was an old Billy who one day last summer casually wandered out on Anvil Rock and looked through the window of the Fire Lookout Station there upon a much surprised Forest Ranger.

Safety from Predatory Beasts

In summer I have never found goat lower than six thousand feet on the major peak, but occasionally as low as five thousand feet on isolated Mount Wow to the south. And the winter range is barely one thousand feet lower. This same band of goats winter at about five thousand feet on Mount Wow, several small bands range between five thousand and five thousand five hundred feet on Satulick.

The reason, no doubt, why the Goat clings to this rugged alpine range is its freedom from predatory animals. Here he has almost no enemies. Eagles and coyotes occasionally take toll of the young kids, and sometimes a wolf in winter, or in summer a wandering Mountain Lion driven by hunger to hunt the high country, harass the bands of goat more or less; but never do the Goats suffer such losses as do the deer in the forests below.

HAWAIIAN PRIMITIVE FLORA

To be Studied by Men of Science and Preserved in Our Beautiful Hawaii National Park

AMONG the problems which Assistant Director Arno B. Cammerer of the National Park Service will consider in the Hawaiian National Park when he reaches there in February is the preservation of primitive conditions in Bird Park.

This spacious area of rich tropical forest was set apart a number of years ago to preserve its wealth of vegetation and bird life. Recently it has been overrun with cattle. The news of its deterioration was brought to this country by Oliver Emerson, a young Honolulu scientist who is taking a special course at Yale.

Our Hawaiian national park is so famous for its extraordinary volcanic phenomena that few have realized its wealth of living things. The rich volcanic soil has produced here and there areas of rare tropical luxuriance which are endangered by modern conditions, but which should be preserved with the utmost of care. There are species which exist nowhere else.

Enemies of Primitive Flora

Cattle and goats are the principal causes of destruction. Grazing lands are scarce and every sufficient area of pasture is eagerly sought by cattle and sheep men. But the greatest danger to primitive forests and jungles is the wild goat, which is found on all the islands.

It is not a native species. The goats are the descendants of animals escaped from private herds years ago. They overrun the wild parts of the islands, particularly the mountains, where they propagate rapidly. It is believed that safety for native flora can only be assured by shooting them down by thousands. There are also wild sheep.

Scientific Societies Interested

Mr. Emerson's account of the struggle of the native flora with the domestic and wild ruminants has aroused wide interest among scientific men in this country, where it is felt that insufficient knowledge exists not only of conditions in Hawaii but of Hawaiian species.

It is probable that surveys will be undertaken in association with Hawaiian scientific institutions, and collections made for use in this country.

Through Mr. Cammerer, the National Park Service will come into touch with this movement, and it may be that the Hawaii National Park may become the center of scientific usefulness other than the study of volcanism.

SUPPORTING SECRETARY WORK'S EDUCATIONAL POLICY

WHEREAS, the Secretary of the Interior announced recently a policy for National Parks providing (1) that the principal emphasis be given to the educational and scientific aspects of National Parks as a great system of out-door museums of the native American wilderness undisturbed by outside interference; and, (2) the dropping from the present National Park system of those parks which do not measure up to recognized standards; therefore,

BE IT RESOLVED, That the New England Forestry Congress heartily endorses and supports the new policy of the Secretary of the Interior with reference to National Parks.

NOW ALASKA FARMS FOXES

Becoming One of the Important and Profitable Industries of Our Big Northwestern Territory

FEW have even heard of farming foxes, yet it is becoming one of the most important and profitable industries in Alaska. Thirty-six thousand foxes were raised last year on three hundred and ninety-one farms. The value of the stock and fixtures is estimated at \$6,000,000.

Recently farmers have applied to the Government for leases of public lands to extend their operations. It seems probable that one, at least, of our finest furs is not likely to pass altogether into the luxury class.

The reindeer industry is also increasing in Alaska. The latest estimate is 300,000, two-thirds of which are owned by Indians. Reindeer meat is now marketed in refrigerator cars. There is grazing in Alaska for four million reindeer, and some day it may compete with other meats in all our markets.

NEW NATIONAL PARK ROADS

At the beginning of the fiscal year, July 1, the National Parks Service began extensive road improvements with the two and a half million dollars appropriated at the last session of Congress. To this, Secretary Work added obligations of a million dollars in contracts against next year's appropriations, in order to secure better prices for the whole. Favorable contracts were made, and work was well begun and here and there well advanced in all the national parks.

The appropriations are being spent on this allotment:

Crater Lake National Park, \$183,000 plus \$56,000 in obligations; Glacier, \$453,000 plus \$515,000 in obligations; Grand Canyon, \$159,000; Hawaii, \$100,000; Hot Springs, \$53,000; Lafayette, \$50,000; Lassen Volcanic, \$110,000; Mesa Verde, \$44,000; Mount McKinley, \$80,000 plus \$50,000 in obligations; Mount Ranier, \$235,500 plus \$50,000 in obligations; Platt, \$42,000; Rocky Mountain, \$145,500; Sequoia, \$255,500; Wind Cave, \$20,000; Yellowstone, \$135,000; Yosemite, \$354,000 plus \$310,000 in obligations; Zion, \$4,000; Capulin National Monument, \$3,000; and Pinnacles National Monument, \$4,000.

Ten thousand dollars have been appropriated for accounting these expenditures and \$70,000 for plans, surveys and engineering.

In Glacier National Park most of the appropriation will be spent on the trans-mountain road, and in Yosemite most of it will be spent in paving the El Portal Road and the roads in the Valley.

The Department of Agriculture has approved the use of the word "chevon," suggested for goat meat by goat raising industries in the Southwest. It is manufactured from two French words, "chevre," meaning goat, and "mouton," meaning mutton. No announcement is made concerning chevon's palatability.

State Forester J. S. Holmes of North Carolina is endeavoring to save forests by encouraging the general use of chestnut for all possible purposes, in substitution for other lumber, before it yields to the devastating blight, which has recently appeared in the South. "A ready and unrestricted market for chestnut timber during the next few years," he announces, "will mean the saving of millions of dollars."

THE NATIONAL PARKS ASSOCIATION

1512 H STREET, N. W., WASHINGTON, D. C.

OBJECTS

1. To conserve nature and win all America to its appreciation and study.
2. To encourage use of the National Parks System for enjoyment of its unsurpassed spiritual and educational value.
3. To protect National Parks against whatever may tend to disturb their continuity of natural conditions or to diminish their effectiveness as supreme expressions of beauty and majesty in nature.
4. To promote use of National Parks for purposes of popular education and scientific investigation.
5. To promote a national recreational policy under which publicly owned lands of the nation shall be equipped for recreational service of the people so far as this is consistent with other requirements.
6. To protect wild birds, animals and plants, and conserve typical areas existing under primitive conditions.
7. To aid specialist organizations, and to interest organizations of many kinds and the people generally, in these objectives.

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To carry out the objectives of the National Parks Association, the NATIONAL PARKS BULLETIN is issued to its members ten times or oftener a year. The annual membership dues are \$3.00 a year, of which \$2.00 is a contribution toward the cost of its publication. Application pending for entry as second class matter at Washington, D. C. A sustaining membership at \$25.00 a year is open to those who wish to help more importantly the beneficent work of the Association.



IN THE DEPTHS OF BULL CREEK FLAT, THE PRIMITIVE FOREST SOON TO BE PURCHASED FOR PERPETUAL PRESERVATION.
HERE IT IS THAT COAST REDWOODS ATTAIN THEIR GREATEST GIRTH, HEIGHT AND MAJESTY



Photograph by H. O. Tobitt

PROBABLY THE MOST CELEBRATED AND WIDEST KNOWN PHOTOGRAPH OF A COAST REDWOOD FOREST

